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ABSTRACT

This annotated bibliography includes summaries of 17 articles and books dealing with the design of school buildings for middle schools. An introductory section discusses recent trends and changes in middle school design, such as the movement toward flexible, open plan buildings that are suitable for a variety of educational approaches and adaptable for after-school use by various community groups. Annotations range from approximately 100 to 250 words. (JG)

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NEW CONCEPTS IN DESIGN OF MIDDLE SCHOOLS

BY

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NEW CONCEPTS IN DESIGN OF MIDDLE SCHOOLS

The middle school is an intermediate grade unit, composed usually of students in grades six through eight. Many educators feel that this intermediate age combination is better suited for youngsters than is the traditional junior high. They point out that this age grouping lends itself to continuing progress, individualization, and team teaching. If so, then middle school design should reflect these educational guidelines and more. Current design trends indicate this is definitely true.

Among the concepts of middle school design changes, there appear several that stand out. First, flexibility of interior design. Then, a movement of school designers toward planning the middle school building to be used not only by students, but as a community focal point. A third trend is a sincere effort to save money, whether the task is new school or renovation. Next, emerges a building concept to allow joint or team teaching. Fifthly, the need for social growth of students has been reflected in building planning. Planners have also placed zones in the middle school, one of the most important is a "privacy area." A final major trend , with us for some time, is the shifting of the "shared facility" idea. In the following pages, I will amplify these and other trends on the part of planners of middle schools in the seventies.

Everyone seems to be using some type of open-space format in some part, at least, of their middle school. The general

teaching areas of math/science, language arts/social studies are mostly all of this variety with few permanent walls. All the divisions of space are made by the classroom furniture, portable chalkboards, etc. The key here is the future; planners don't know what direction curriculum and teaching methods might take-hence this powerful trend of total flexibility. One school being built today even includes a space above the suspended ceiling for addition of wiring for the technological teaching devices of the future. Coupled with this theme, is a parallel movement of informality inside the school. Carpeted sunken seating pits serve as an example here. The open space idea also allows varying group sizes. The media center, almost invariably today is designed into the center of the schools so that it provides easy access on the part of the student for research and remedial help. (Some larger schools have several media centers for every "house" or division of the student body.)

A second theme, as I have indicated, is that middle school facilities are aimed to involve the whole community. The public parts, such as swimming pools and theaters are located so that there is easy public access. Public relations are kept in mind when parents have waiting rooms which allow them to view classes or some other activity. One large school even has a "parent's pavilion."

A third major trend activated by inflation and the energy crisis is a greater attempt to save money. This is, of course, reflective in design. Renovation is more likely than ever. Some schools, such as Hollis Middle School in New Hampshire,

are cutting costs by leaving forced air systems exposed, and covering up with inexpensive wall coverings and paint. in bright, interesting colors. This same school uses mercury indirect lighting indoors and has cut down on the use of window glass, saving heat. They have done as much as they can to cut down on maintenance costs.

Educator's desires to achieve team teaching, whether inside a particular discipline or interdisciplinary, is reflected in today's middle school buildings. Pods separate from other buildings or "T" configurations all point to getting teachers closer for better communication. Even if the school design is not open space, there are usually small meeting rooms, small group areas and large group instruction areas. The loft concept seems to be the incorporation of similar subjects into large open-space in the school, sometimes on a mezzanine location.

The flexibility of the loft concept allows teachers and students to jointly manipulate their environment to fit any curriculum, and grouping of students through the age span of ten to fourteen years. Some schools continue to build closed classrooms for fifth and sixth graders, who eventually work into the open space and deal with more than one teacher.

The explorative arts-shops, arts, and crafts and home economics are more apt to have permanent interior walls. One school provided an exception to this: it had a large open space area which could be divided by tracked partitions, using acoustical tile to help with noise problems.

A significant part of the designs of middle schools that interested, and to some extent pleased and surprised me, was the inclusion of planned social areas. This took generally two forms: an interior commons area for eating and lounging, with benches, exhibits, etc. This was called a student activity center by one particular school, where games could be played, friends could be talking, and the like. A second manifestation of this trend was to provide a beautiful outside setting, a complete campus atmosphere by building landscaped courtyards, sidewalks, benches, and footpaths. This is an outgrowth of the educator's recognition that the social development of students, especially at the middle school, is as important as their academic growth.

Designers have also included in their plans a "zone of noisy area" where loud activities, such as shop, take place. These may be located next to high traffic areas. The important corallary here is that there are also "privacy zones" where students may work in a subdued atmosphere. Private study areas or small group rooms would be located in this zone. Informality and hominess are dialed in.

"Shared facilities," as exemplified in the gym-cafeteria, has been with us for a long time. What is new is the use of stages which, by the use of partitions, can be used in several rooms at once or one at a time. Large schools are sharing gyms, planetariums and other unique and expensive to build educational equipment.

Another trend deals with food services. Several plans

include only a kitchen-no large eating cafeteria where the whole school arrives at once. Instead, food is being brought to the students in their open classrooms. Other plans show several small dining rooms in view of one large dining room.

The problems of noise, which has always been a factor with this age student, has been attacked with liberal doses of carpet and accoustical tile when money hasn't been an insurmountable burden. Even the schools which were built on a tight budget used it to some extent.

Buildings for middle schoolers have now begun to reflect the permancy of change in education. Saving energy will have a greater future impact on middle school design. Most of all- openness and flexibility seem to be on the minds of most middle school designers of today.

ANNOTATED BIBLIOGRAPHY

"Attractive, Functional School at a Surprisingly Low Cost," School Management (June-July 1974): 32-34.

The major goal of the building of Hollis Middle School in New Hampshire was to keep costs down, but retain something that still fits the fifth to eighth grade student. The cost was kept to $19.68 per square foot.

First, four levels were kept under one roof. At entrance level were administrative offices, a resource center, and a cafeteria with a music/stage area. The community use concept is maintained by allowing use of the cafeteria and lobby without opening the entire building. The second level had separate spaces for home economics, art and industrial arts. Two large classroom areas on spearate levels are open space using mobile and flexible equipment to divide.

How was money saved? Here is a summary of answers. Use of very little glass and the use of normal insulation reduced heat loss to 25% less. Inside, for lighting, outdoor floodlights with indirect illumination put the energy cost down 15%. The electrical forced air systems were not hidden, but painted bright colors. Concrete was used, reinforced by steel as were floor slabs. Insulated concrete block was used. All these rather drab sights, ducts, and easily seen concrete blocks were spiced up with matching paint.

The price was kept down and the design was aimed at cutting maintenance costs.

Cutler, Marilyn. "Intermediate, Open and Carpeted: Banford's a School that Could Give Ideas," American School Board Journal, (May 1973) :48-49.

This school incorporates the idea that the whole community should be involved in the school setting. The swimming pool and exercise areas are located so as to stimulate public use. The heart of the school in the educational places as well as design, is the instructional materials center, planned for the use of electronic teaching aids. There are independent study areas short of the materials center.

The school was planned so that the noisy activities are close by the "major traffic lanes" and there are quiet zones, where more subdued things occur. A mezzanine classroom area is located above the ground floor.

Much carpet was used in Banford, of interes was the carpeting of the home economics area and the commons.

Cutler, Marilyn. "New Middle School did More than Retread a Small Town District," American School Board Journal (May1970): 32-34.

Marilyn Cutler says that a small town middle school can take advantage of some modern design trends as well as larger schools. This school, grades 6-8, has been decorated on the outside to it in with the rural surroundings. Lannon stone, acquired nearby, is on the outside of the whole building topped off with a canted facia of bronze aluminum. Classroom clusters are utilized with resultant less corridor space; the compact design of clusters lowers heating costs, improves air cirulation. The clusters can be made in four classroom as all interior partitions can be moved. Teachers have planning areas with observation windows. The clusters are not found in the band, chorus, home ec, or typing teaching areas.

"Forecast: Fair Weather and Budget Building Ideas," School Management (Feb. 1974) :34-35.

This article describes the advantages a good climate can give to a school design. Two identical middle schools in the Montibello Unified School District, California, were built with an eye toward out door activity.

A sports activities pavilion, wall-less, was an interesting feature of the school. Flooring for the basketball area was a synthetic covered concrete which could take any abuse. This, then, was the school's gymnasium. There were shower and exercise buildings located next to the pavilion.

Another of the interesting areas was the outdoor amphitheater. This was easy to make. Simply bulldoze out an area. With a seating capacity of 500, this area could be used for the school assemblies, plays, or the community. This amphitheater was located near the cafeteria and could handle overflow during peak croweded periods.

The main classroom and administration building houses the library also. This is the only two story structure on campus.

Hasenpflug, Thomas R. Planning Educational Facilities: The New Environment. New York: ERIC Reproduction Service, ED 070 162, 1972, p. 32.

Mr. Hasenpflug, in this talk, was concerned with all school planning in total. It was very helpful to me because it helped clarify trends that I could sense in my exploration of middle school design. Generally, the author suggests that openness is good but that some provision should be left to close it off. He also brings forth the idea that horizontal and vertical space should be used in schools. Another thought was that schools must serve the entire community and not just the student population. A final idea is to "create a climate and a facility for self-motivation."

Henry B. Dupont Middle School. Dupont School District 66: ERIC Reproduction Service, ED 035 255, 1973, pp. 1-23.

This school is located on a 25 acre site and has a space per pupil ratio of 181 square feet to 1. It is a two level structure, with an instructional material center on each level. Basically, the building is divided up into triads so that the equivalent space can be divisible at the student and teacher wishes. The sixth grade students are then introduced over a period of time to "open space" and team teaching situations.

The use of the I.M.C. is maximized by placing conference rooms, teacher's offices and counseling areas right "next door."

The auditorium could be used as a "teaching auditorium." Features that were of particular interest to me were: a covered outdoor play shelter which would come in handy in Oregon, and a corrective gymnasium and planetarium.

Long, Ralph A., "Coan Sets its Sights on an Entire Community," American School Board Journal, (November 1969) : 34-37.

The principal and guiding hand in the planning of the Coan Middle School, describes some of the educational and design concepts that went into its creation. This school has an adequate amount of site, 16.5 acres utilized in playgrounds. It was built in three levels, most exterior was poured in place concrete.

The first level shows a middle area commons. All facilities on this level feed into this commons. It is essentially a place for students to get together and socialize. The third floor is a "loft" for certain explorative classes. Spaces are open and flow into each other. Interior glass walls are used, Carpet is used extensively throughout the building.

"Middle School Butterfly Design has Roof with Cable Supports," American School and University. (March 1972): 38-44.

A California middle school has planned a building to be built in three stages. First, four dome-like structures, air-conditioned, carpeted with a roof held up by cables, were built. Stability for the roof is provided by urethane foam on the inside, covered by a hypalon outer (roof) layer. Internally the domes will have "few permanent walls," teacher planning areas will have "accoustical but not visual privacy. There will be closed conference rooms, however. Phase 2 is the addition of a kitchen where lunches will be brought to students from portable servers. Finally, phase 3 will be an open gym and theatre to take advantage of this reas fine climate.

"Needed: Playground and Park Solution: Go to the Roof!" C.E.F.P. Journal, (March-April 1973) : 12-13.

The East Orange Middle School in New Jersey was perhaps the single most innovative school that my research connected me with. The school itself is concrete framed, and comprises three buildings linked by an underground passage way. It is designed to fit nicely into the surrounding community of high and rise apartments. The roof of the school is connected by ramps from ground level. It is 2½acres of unique artistic space that can house many activities. This will serve as a community park as well as a playground.

Each house serves two families of students numbering 300 each. Each family has a 100'x100' loft where the "basics" are taught in an open space situation.

Art areas separate each loft in a house. These areas have more "permanent" folding partitions and have spot lighting to provide focus if a group project is underway.

The house also shares a mezzanine which will include reading, typing labs, and administrative areas.

The whole school shows some facilities: physical education with 2 swimming pools, which can be used by the public. Dining rooms are large enough for 250 students and open on to the roof. The dinig rooms can be used by community, or for student purposes (music room). One kitchen moves its food to the various dining rooms.

"One Room Schoolhouse 1972 Style," School Management (April 1971):17-20.

This middle school has split levels both north and south in an oval shaped main building area. The north and south ends of this building are the "house learning centers" which are open space with completely portable equipment. The learning resource center is on a higher elevation, and according to the authors will "provide a direct physical relationship and reduce the perimeter of the building." A student activity court is located in the middle of the building, side by side with the learning resource center. A kitchen is next to the court, but food is to be carted to the classrooms and students will eat there.

There are to be no partitions between shops, home ec and fine arts areas. There is a music area located off the activity court. The theater is located between the activity court and the music area so that it can be used by either area, or a "theater in the round" with people watching from both areas.

The building has eliminated corridors, has automatic air-conditioning, and carpeting. Interior walls will be vinyl, block accoustical tile or wood paneling. All ceilings will have accoustical tile. Cost was "28.00 per square foot.

Planning and Building Research Section. School for Intermediate Students. Ontario Department of Education: ERIC Reproduction Service, ED 055 347, 1971, p.38.

The planners of the Toronto, Canada school district created an "ideal" plan, giving some suggestions for the design and building of a middle school. The following is a condensation and summary of their recommendations.

The building must be adaptable to curriculum change and flexible in internal space arrangements so that interior furniture and equipment can be moved. The building should allow for adding new technological equipment.

The resource center should be at the heart of the building, but can be reduced in space if smaller resource units are included. Flexible general learning areas should be included, but special areas for career skill development, arts and music should be set aside.

The social development of students should not be neglected. Places for informal and formal gathering should be included.

Class areas should allow for exploration, where-in groups may vary in size and work inside and out. Finally, the middle school facility should have areas away from traffic lanes that are quiet and relaxing for individuals or small groups to study or work.

Shapiro, Arthur C. et al., "Model Middle Schools," Nation's Schools 91 (May 1973) : 45-52.

The authors of this article are speculating as to what a model middle school ought to be like. They came up with two general ideas. First, they plan to build a group of sub-schools around the instructional research center. Each sub-school would have a building plan divided into two parts; a basic studies area, essentially open-space with a large group room, anda smaller resource center included. Then the students would go through a social commons area to a physical ed-arts area which would include more permanant settings. One grade level would be in each sub-school.

Another model, they called an "immersion system" would have 8 interdisciplinarey clusters of 100-125 students each. Each cluster would them include teacher work rooms, as the cluster will house a team.

Staff of Waren Holmes Co., "28 Ways to Build Mistakes Out of Your Middle School," American School Building Journal 158 (July 1970) :17-24.

The staff of Waren Holmes Company architects and the editors of the American School Board Journal combined to give some suggestions in designing and planning a middle school. They recommended to consider several small dining rooms instead of one large one. Regarding selection of site, use it to advantage--if there is water or woods, plan to use these outdoor education facilities. Consider burying the school to cut costs.

Another important trend is development of social skills-they advocate a place for students to do that, a student commons area. Still, privacy should be remembered, so they include private places for counseling, and independent study areas. Lockbrs should be insulated quiet types located near independent study areas. Conservation of energy is remembered as the writers recommend few windows and then only when a feeling of outdoors can contribute to student activities. They also advocate the use of white sound to improve the sonic environment.

They recommend further that all the facilities should be flexible. The stage could be built in movable sections, the shop should be completely open, home economics should include an informal group discussion area. Informal "seating pits" could be included. Another recommendation would be a viewing room for parents to watch school activities as they wait. There would also be common storage facilities for the school

and staff offices together to improve teacher communication.

A final recommendation is that a space should be left above the ceiling for the placement of wires for future electronic teaching aids.

Stein, Max and Annie. A Plan for Middle Schools, Buffalo, New York. Center for Urban Education: ERIC Reproduction Service, ED 085 902, 1970, p. 199.

Buffalo, New York has planned for the future the creation of a middle school complex, so that some facilities may be shared. Sometimes staff serves more than one school. There will be six houses with four schools per house. (Each house is a grade level.) The total of students is 3600. There will be three structures, two houses on each one on different floors. These three buildings will be linked by bridges. One other building will house a guidance and central administrations building. Each level will have a balcony for small groups and the lower floor will house self-contained classrooms, space for large projects. The upper level will be an open space student arranged learning environment. Parents' rooms will be located on the lower level. Dining rooms separate the classrooms from the social areas.

The social areas will be walkways, landscaped courtyards and outdoor displays between buildings. This is foot traffic only to create a campus feeling.

The complex will also have shared facilities: a main auditorium and a parents' pavillion. These community use facilities will be close to the main entrance.

"Teaching Loft Concept Solves Open Plan Problems," American School and University, (October 1972) : 42-43.

This middle school is based on the "loft" concept. The loft appears to be the "wing" idea with the addition of an elevation difference and the loft housing related disciplines and activities. Basically, there are two upper lofts: the humanities loft and the science/math, which houses the majority of the 35 teaching stations. Another loft is the "common activities center" where there is a cafeteria, large group-social area and the like. The amphitheater is sunken with chairless levels rising above it. The explorative education loft (home economics, art, etc.) was built to encourage the type of action where there can be freedom of movement, equipment, and student control. This is the theme of the entire building's design.

To encourage the type of response from the middle schools that fits the theme of middle school education is the building's goal.

Truesdell, William H. "The New Importance of Renovation," School Management 17 (Aug.-Sept. 1973) :12-15.

This Comstock, Michigan school district, rather than build a new middle school, rennovated an old junior high. The cost was kept to $11.18 a square foot, which looks like a significant savings. A large area for science was built with laboratory facilities the equivalent of four standard lecture/lab rooms. The home ec area is open and consists of multiple stations, which are divided by movable cabinets.

This building had two gymnasiums before the big changes. One of these was made into an auditorium/large group instructional area. An art lab was also included here. The old gym risers were carpeted to provide informal seating.

Generally, large doses of carpet were prescribed, accoustical ceiling tile put in place. There was only 10% of the previous amount of window space left when the rennovations were finished.

Typell, Ronal W., "The Open Middle School: A Model for Change," The National Association of Secondary Principals Bulletin (April 1974) : 62-66.

Ronald Typell recognizes three things as important changes needed by the middle school. First, the re-designing of the physical environment, second, reorganization of teachers into teaching teams and creation of a curriculum to fit the needs of this age student, considering their particular background. He recommends that octagonial pods, such as at Beachwood Middle School in Ohio is a good building design for a group of students not more than 100. He advocated flexible use of space. The article didn't give many examples of how to do these things.

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